EFFECTIVENESS OF KALEIDOSCOPE VS TOY MOBILE PHONES AS DISTRACTION TECHNIQUES ON PAIN AMONG CHILDREN DURING IV INFUSIONS AT SELECTED HOSPITALS, SALEM

By

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ABSTRACT

A Study Was Done to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain Among Children during IV Infusions at Selected Hospitals Salem. Quasi experimental post test only without control group design was adopted where non probability convenience sampling technique was used to select 30 samples each from Sri Gokulam Hospital(Experimental group I) and Pranav Hospital(Experimental group II), Salem. Experimental group I were given Kaleidoscope at the onset of the procedure and were motivated to play. Experimental group II were given Toy Mobile Phone at the onset of the procedure and were motivated to play during the procedure. Pain observation scale was used to assess the level of pain of children. Data was collected from 11.07.2011 to 07.08.2011. Data was analyzed by using descriptive and inferential statistics. Level of pain among children in experimental groups I and II reveals that in experimental group I 3(10%) of children had mild pain, majority of children 19(63.33%) in experimental group I and in 20(66.66%) experimental group II had moderate level of pain. However none of the children had severe pain in experimental group II whereas in experimental group I 8(26.66%) had severe pain. Mean score for experimental group I was 3.58±1.15, which was 54.28% of total score, whereas for experimental group II the mean score was 2.73±0.94 which was 39% of the total score, revealing a difference of 15.28%. Significant difference was found in the post test mean values of level of pain ($t=4.25$) at $p<0.05$ level among experimental groups I and II. In both the groups, there was no significant association between the level of pain and the demographic variables at $p<0.05$ level. This study implies that pain among children distracted with toy mobile phones was comparatively lower than those distracted with kaleidoscope and is an effective intervention to distract children.

CHAPTER I

INTRODUCTION

Optimum pain management is the right of every patient and the responsibility of every health professional!

-Benjamin

As providers and caretakers, adults view the world of children as happy and carefree. After all, kids don't have jobs to work or bills to pay. So what could they possibly have to worry about? Surprisingly the answers is …. Plenty! Even the very young children have worries and experience stress to some degree. Sickness is one major factor of stress in children and when pain is due to invasive procedures it creates a lot of inconvenience for them. **(Ephraim Joseph, 2002)**

Since the primitive times, pain management has been inadequate in children .Earlier it was thought that children did not experience pain. Research has shown this to be a myth and the physiological response to pain is similar in children as it is in adults. What differs between children and adults are the clinical reactions and perceptions towards pain experienced by both .Children do not have the understanding of pain ,so their response may be to cry or withdraw .Hence the researchers have recognized the need and have said that effective pain management for children is mandatory, not optional. **(Tiaki kai, 2009)**

The neural progression of pain transmission begins with the development of skin, mouth and sensory neurons by the end of the first 2 weeks of gestation.. There are a number of sources of pain in the childhood period. These include acute pain (diagnostic and therapeutic procedures), continuous pain (pain from thermal/, postsurgical pain), and chronic or disease-related pain (repeated heel sticks, indwelling catheters thrombophlebitis). The most common sources of pain in healthy

infants are acute procedures, including heel lances, venipuctures etc. **(Stanton, et.al., 2007)**

Pain is one of the most common problems experienced by children occurring as a result of injury, illness, and necessary medical procedures. It causes increased anxiety, avoidance, somatic symptoms, and increased parent distress. The pediatric acute pain experience involves the interaction of physiological, psychological, behavioral, developmental, and situational factors. **(Vatsa Manju, 2009)**

Distraction helps a child of any age shift attention away from pain and on to other activities. Common attention-sustainers in the environment include bubbles, music, video games, television, the telephone conversation, school and play. **(Jenson, et.al., 2010)**

Distraction can be used to improve the coping mechanism prior to treatment, to lessen the build up of anxiety as much as possible, and also after treatment to help a child calm down again and get back to normal activities. **(Webster Allison, 2011).**

Need for the Study

"Childhood is the most beautiful of all life's seasons"

-Marvel Wright

One of the most stressful situations of childhood is having to be hospitalized and experience painful procedures .Expressions of these procedures can have lasting impressions on the little minds of children and be traumatizing to the further hospitalizations or immunizations. (**Nair.M.K.C, 2005)**

While pediatric pain remains underreported and poorly understood, pediatric health professionals recognize that many children have pain in both acute and chronic forms. Many hospitalized children have painful conditions, and virtually all undergo some painful procedure. **(Judith Mc Gill, 2004)**

Children in hospitals experience multiple painful procedures daily, yet the use of specific pain management strategies in various hospital units is unknown. Painful procedures can have negative physiological, emotional and behavioural consequences such as greater pain responses to and anxiety toward subsequent painful procedures which may result in avoidance of procedure, such as vaccination in future. **(Science Daily, 2011)**

Procedure related pain is also associated with a wide variety of medical treatments such as burn dressings, laser treatments etc. Over the past 10-15 yrs, the findings of several epidemiological surveys have consistently emphasized that a significant population (49-64%) of hospitalized children receive inadequate pain management despite the increase in knowledge and available treatments. **(Gladwin, 2006)**

Distress does not have to be an inevitable outcome of painful procedures, like IV infusion and distraction can be a simple yet powerful approach to help a patient through this process. The aim of this technique is to allow the child to feel more confident and secure during IV infusion, and to provide them with a much to put away pain they feel at their "periphery of awareness". Distraction attempts to draw the patients attention away from the treatment they are about to receive, by focusing their attention on something other than the treatment itself. It is also essential that distraction should always last the length of the infusion procedure. **(Dyer Jenny, 2003)**

A meta analysis of the effects of distraction on children's pain and distress during medical procedures revealed that distraction has a positive effect on children's distress behaviour across the population. **(Rogers, 2005)**

An evaluative study was conducted in Canada among 55 hospitalized toddlers, to reduce their pain during venipuncture .The children were asked to look through a kaleidoscope during the procedure and the mean values show a positive effect in reduction of pain. The study concluded that distraction with kaleidoscope effectively reduced the pain related to venipuncture in young children. (**Stineon Jenifer, 2008)**

A randomized study was conducted at University Of Pacific USA. The main aim of the study was to assess the effectiveness of auditory music distraction for reducing distress during injections among 100 young children below 5 years of age. The result shows that the children who received music therapy perceived less distress than the control group. (**Noguchi L.K, 2006)**

Even in the 21st century, children are still suffering from pain during hospitalization and it is the moral and ethical obligation of nurses to manage pain effectively. It is very heart breaking to see the little children writhing in pain, although we cannot completely get rid of it we sure can reduce it to some extent. As the health care professional involved in giving bedside care around the clock, licensed nurses are in a unique position to promote the art of pain management and nurses need to reflect on their practice and remember that, they are accountable for the care of children in pain. Over the past few decades researchers have been studying about the plasticity and complexity of pain and have stressed the importance of nonpharmacological techniques of reducing pain like distractions. Thus the investigator has chosen kaleidoscope and toy mobile as distraction techniques to reduce the pain of the little children and to compare the effectiveness between audio and visual distraction techniques.

Statement of the Problem

A Study to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain among Children during IV Infusions at Selected Hospitals, Salem.

Objectives

1. To assess the pain among children in experimental groups I and II during IV Infusions.
2. To compare the effectiveness of distraction techniques on pain among children in experimental groups I and II .
3. To associate the level of pain among children during IV Infusions with their selected demographic variables.

Operational Definition

Effectiveness:

Significant difference in the pain level of children in experimental groups I and II during IV infusions

Distraction:

Distraction involves introducing a toy mobile phone and kaleidoscope to the children aged between 2 to 4 years during IV infusions and help them to focus their attention on something other than pain associated with the procedure.

Pain:

Unpleasant feeling experienced by children between 2 to 4 years of age during IV infusions, measured using Pain Observation Scale.

Children:

Children within the age group of 2-4 years admitted in the selected hospitals and undergoing IV infusions.

IV Infusions:

Refers to the injections given in an existing IV line.

Kaleidoscope:

A toy made of cylindrical glass pieces and beads which shows colourful images, when rotated.

Toy mobile:

A toy mobile phone which produces sound

Hypotheses

H_1: There will be a significant difference on the level of pain during IV infusions among children in experimental groups I and II at $P \leq 0.05$ level.

H_2: There will be a significant association between the level of pain of children in experimental groups I and II with their demographic variables at $P \leq 0.05$ level.

Assumptions

1. Pain is multifactorial
2. Behavioural responses to pain are most common during IV infusion.
3. Children exhibit a wide range of behavioral responses to painful stimuli.
4. Children's behavioural responses can be minimized using non pharmacological measures.
5. Distraction techniques can reduce the pain.
6. Auditory distractions capture the attention of the children better than visual distractions.

Delimitations

1. The study is limited to 2-4 years old children who are admitted in selected hospitals, Salem.
2. Assessment of pain is limited to only during IV infusions.
3. Data collection period is limited to 4 weeks.

Projected Outcome

This study was conducted to compare the effectiveness of kaleidoscope and toy mobile as distraction techniques on pain among children 2-4 years of age. Findings of this study will help the staff nurse to practice distraction techniques during painful procedures in hospital and community and thereby reduce the pain of the little children.

Conceptual Framework

Conceptual framework is a type of intermediate theory that has the potential to connect all aspect of enquiry (eg) conceptual framework act like maps that give coherence empirical enquiry.

The present study is based on the concept of using kaleidoscope and toy mobile phones as distraction techniques for pain among the children during IV infusions. The investigator adopted the Weidenbach's Helping Art of Clinical Nursing Theory (1964), which describes desired situation and it directs action toward an explicit goal. This theory has three factors,

1. Central Purpose
2. Prescription
3. Reality

Central Purpose

It refers to what the nurse wants to accomplish. It is an overall goal towards which a nurse strives.

Prescription

It refers to plan of care for a patient. It will specify the nature of action that will fulfill the nurse's central purpose.

Reality

It refers to the physical, psychological, emotional and spiritual factors that come into play in situations involving the pediatric ward.

The five realities identified by Wiedenbach are agent, recipient, goal, mean activities and framework.

The conceptualization of nursing practice according to this theory consists of three steps as follows,

Step-I: Identifying the need for help

Step II: Ministering the need for help

Step III: Validating that the need for help was met.

Step-I: Identifying the need for help

Involves viewing the patient as an individual with unique experiences and understanding the patients perception of the condition.

The investigator identified the children who require appropriate pain management.

Step II: Ministering the need for help

Refers to provision of needed help.

After identifying the need for pain management, the intervention was provided.

Agent **:** Investigator

Recipient **:** Children 2-4 years of age receiving IV infusions

Goal **:** Distracting the children during pain

Mean activities **:** Provided kaleidoscope for experimental group I and toy mobile for experimental group II.

Framework **:** Sri Gokulam Hospital and Pranav Hospital, Salem

Step III: Validating that the need for help was met

Refers to the collection of evidence shows that the patient's needs have been met and that his functional ability has been restored as a direct result of the nurses action.

It is accomplished by means of post test assessment of pain using Pain Observation Scale for experimental groups I and II after rendering the needed help and comparing the effectiveness of distraction techniques between the experimental group I and experimental group II.


PLAY

Summary

This chapter dealt with introduction, need for study, statement of the problem, objectives, operational definitions, assumptions, hypotheses, delimitations, projected outcome and conceptual framework.

CHAPTER II

REVIEW OF LITERATURE

The task of reviewing research literature for research involves the identification, selection, critical analysis, and written description of existing information on the topic of interest. It is usually advisable to undertake a literature review on a subject before actually conducting a research project. Such a review can play a number of important roles. **(Polit, D.F, and Hungler, 2003)**

In this chapter, literature was reviewed theoretically, empirically and is organized under the following headings,

- Literature related to procedural pain in children.
- Studies related to procedural pain in children
- Literature related to non pharmacological measures for pain management.
- Studies related to non pharmacological measures for pain management

Literature Related To Procedural Pain In Children

Pain is an uncomfortable sensation that tells you something may be wrong. It can either be steady, throbbing, stabbing, aching, pinching or described in many other ways. Sometimes its just a nuisance, like a mild headache, other times it can be debilitating. Pain is absolutely what one feels. **(Kamath Vaibhav, 2010)**

Needle pain is the most common type of procedural pain and causes considerable distress to many children. Surveys have found that more than 50% of children and adolescents who undergo venepuncture for routine blood sampling experience moderate to severe levels of distress or pain. Younger children typically report greater levels of pain intensity and unpleasantness from needles than older children. **(Goodenough, et al., 2009)**

Technological advances and changes in health care have resulted in more pediatric procedures being performed in a variety of settings. Many procedures are both stressful and painful experiences. For most of the procedures the focus of care is to psychologically prepare the children and the family. Therefore it is vital that the care giver should assist the children to cope with and relieve from necessary but painful clinical procedures. **(Doody S.B, 2007)**

It is important to deal with potentially painful situations effectively as this may be the child's first contact with the health professionals. A positive experience to childhood may prevent fear and anxiety associated with pain being carried out into adult life. Children may undergo a range of potentially painful experiences in the primary care settings. **(Pilleteri.A, 2006)**

Research now shows that poorly treated pain can have long lasting effects on infants and children. Painful procedures performed during the neonatal period have been shown to produce increasing distress during later procedures such as immunizations. In children undergoing frequent painful procedures such as bone marrow aspiration and lumbar puncture for the treatment of cancer, the memory of pain from the first procedure can affect the pain and distress associated with subsequent procedures. Preprocedural fear and anxiety are major problems. Untreated pain may also have harmful effects on the course of a disease. **(Amanda J Harvey, et.al., 2005)**

The prevention of pain in children should be the goal of all caregivers because painful exposures have the potential for deleterious consequences. Although there are major gaps in our knowledge regarding the most effective way to prevent and relieve pain in children, proven and safe therapies are currently under utilized for routine minor yet painful procedure. **(Cooper.B, 2003)**

Children endure an array of painful medical treatments starting at birth and continuing through adolescence. These procedures may include heel sticks, circumcision, immunizations, catheter insertion, chest tube placement and removal, lumbar punctures (LPs), bone marrow aspirations (BMAs), venepuncture, dental restorations, burn wound treatments, and many others. For each of these painful procedures, children's fear and anticipatory anxiety increase the likelihood of them experiencing more pain and distress during the actual procedures. **(Blount,et.al., 2002)**

Studies Related To Procedural Pain In Children

"You know your pain, your challenge is to explain your pain to your health care professional, their challenge is to try to understand it and respond in a manner appropriate to you"

A Descriptive comparative study was done among 25 hospitalized children 3-6 years of age in a metropolitan general hospital to describe the procedural pain in children. Pain indicators like system wise changes, behavioural indicators and neuromuscular responses were used to assess the pain. The tool was based upon observation on the behavior of the child. The findings revealed that almost all (98.6%) children reported pain during the procedure. **(Narendra Deep, 2009)**

In a study conducted by University of Chicago researchers used functional magnetic resonance imaging scans to study the response of pain among 375 hospitalized children. The researchers have observed that just like the adults, all the (100%) children show responses to pain in the same areas of the brain. **(University of Chicago, 2008)**

A descriptive study was conducted among 77 children ages 6 and below in the Oklahoma medical centre to assess perception of pain. The researchers found that in

about 68 (88.31%) children, perception of pain appeared to progress through the cognitive levels. **(Hurley, et.al., 2008)**

A descriptive study conducted at selected paediatric hospitals in Houston reveals that Children often experience unpredictable and severe procedure-related pain in hospitals that can be associated with negative emotional and psychological aspects. These medical procedures also cause anxiety, fear, and behavioural distress for children and their families, further intensifying their pain and interfering with the procedure. Medical procedures, particularly needles (0.38 ± 0.19) are among the most feared experiences reported by children. **(Broome, et al., 2008)**

Surveys of parents, staff direct observation and children drawings and self ratings at the Kimberly medical institute have suggested that venepuncture is associated with considerable distress from the procedure, with between 34% and 64% of children experiencing moderate stress and pain from the procedure. **(Roper David, 2007)**

A systematic review conducted at Carnforth children's hospital has suggested that almost 50% of children 7 – 18 years of age report needle stick experiences as unpleasant and painful which causes subsequent high levels of anticipating fear and distress.**(Mccasland, 2006)**

An experimental study was conducted at a mission hospital in Bihar on assessing the procedural distress among children 4-8 years of age. Ninety children were randomly selected and observed using a behavioural observation scale. Analysis of procedural phase indicated that children exhibited elevated distress with a mean score of 4.32 ± 0.94 immediately prior and during the procedure. **(Piira. T, et.al, 2005)**

The first pain experience in children has profound effect on subsequent pain perception and responses. Memory of pain in children is evident and different in

responses to subsequent painful procedure. The ways that children cope with pain differ as per their developmental stage, younger children focus most on the physical aspect of pain. (**Blount, et.al, 2002)**

A study was conducted at a selected hospital in Dharapuram among preschool children undergoing IV infusions to assess the pain and distress during the procedure.40 samples were selected by convenience sampling method. An evaluative research design was used. The findings of the study show that majority 92.5% of the children did experience distress during IV infusions. **(Maheswari, 2002)**

Literature Related To Non Pharmacological Measures For Pain Management

"Its never too late to have a happy childhood" - Tom Robbin

The principal behind distraction methods is derived from "fixed capacity" theories of attention. According to such theories, individuals have a limited pool of attentional resources. The allocation of these attentional resources is assumed to be under some degree of conscious control. Thus, directing a child's attentional resources to a distractor stimulus (e.g., a pop-up book), renders fewer attentional resources available to focus on the painful or distressing stimulus (e.g., sensory input associated with needle prick during a blood test). Now more recent attention theories suggest that the previous theories may have underestimated the complexity of the human attention system, the key factor of the fixed capacity. (**Perri Tina, 2009)**

Distraction attempts to draw the patient's attention away+ from the treatment they are about to receive, by focusing their attention on something other than the treatment itself. The aim of this technique is to allow the patient to feel more confident and secure during infusion, and to provide them with a mechanism to put any pain they feel at their "periphery of awareness." Distress does not necessarily have to be the inevitable outcome of painful procedures, such as an infusion, and

distraction can be a simple yet powerful approach to help a patient through this process. Distraction should always last the length of the infusion period. **(Damjanov Ivan, 2005)**

A patient's coping style towards treatment is greatest when the procedure for infusion is explained to them. Distracting the patient during an infusion can also help decrease their pain perception. Together, preparation and distraction techniques can reduce the risk of traumatising the patient, and enable future treatment sessions to be conducted without them feeling undue fear or anxiety. This is particularly important, as patients who are relaxed and calm during infusion can be treated quickly with minimal pain and discomfort. **(Pareeth, 2004)**

Distraction has been noted to be an effective method to help children cope with painful procedures such as IV infusions, drawing blood samples, bone marrow aspiration etc.. In the studies carried out, it was found out that distraction made with different distracters like party blowers, breathing exercises, musical toys etc. reduced the pain of venipuncture. (**Fatma Tufekci, et.al, 2003)**

Studies Related To Non Pharmacological Measures For Pain Management.

A Quasi experimental study was conducted to evaluate the effectiveness of therapeutic play as distraction technique on pain during injections among hospitalized infants in selected hospitals, Salem. 70 samples were selected using non-probability convenience sampling. Modified Lawrence infant pain behaviour observation checklist was used to collect data from the infants. The mean score of the infants in experimental group 9.03±1.543 was lower than that of the control group 12.7±1.045 revealing that play therapy during injection was an effective distraction ($t=4.26$ at $p<0.001$ level) among hospitalized children. **(Rathilka.N, 2010)**

A study was conducted to assess the effect of distraction (looking through kaleidoscopes) to reduce perceived pain, during venipuncture in 145 healthy school-age children. The study was carried out as an intervention–control group design. Children in whom venipuncture was applied in a laboratory for examination were included in the study. The data were obtained by a form determining introductory features of the children and Wong–Baker FACES Pain Rating Scale and Visual Analogue Scale evaluating the pain. Pain levels of the children according to both scales in intervention group (3.54 ± 0.81) were lower than those of control group (2.58 ± 1.04). It was detected that the distraction made with kaleidoscope effectively reduced the pain related to venepuncture ($t=2.86$ at $p<0.001$ level) in school children and that some features of the children influenced the perception of pain. **(Ayda Celebioglu, et. al, 2009)**

A study was conducted at Bahrain to assess the effectiveness of audio taped lullabies as a distraction technique among children undergoing venepuncture. The aim of the study was to evaluate physiological behavioural distress and perceived pain among 60 children between 3-6 years during venepuncture. The results concluded that total distress scores (2.62 ± 0.99) were significantly less for the experimental group ($t=3.68$ at $p<0.001$ level). **(Megel, 2008)**

An experimental study was conducted at the university of Wyoming U.S.A. The main objective of the study was to compare two distraction techniques for children undergoing venepuncture. The samples included were 80 preschool children .They were assigned to party blowers and music as distraction. The result concluded that music (2.8 ± 0.6) 76% has an effect on reducing children's pain than party blowers (3.1 ± 0.01) 24%. This revealed that music was the better distraction ($t=4.18$ at $p<0.05$ level). **(Boven A.M, 2007)**

A randomized study was conducted at University Of Pacific USA among the under five children in a selected hospital. 66 samples were selected by convenience sampling technique. The main aim of the study was to assess the effectiveness of music distraction for reducing distress during injections. The result shows that the children who received music therapy as distraction a lower mean of 13$\pm$0.02 perceived less distress than the control group 2.8$\pm$1.16). it also revealed that music therapy was effective as a distraction at p$\leq$0.001 level. **(Noguchi L.K, 2006)**

An experimental study was conducted on divertional therapy of therapeutic play during painful procedure among infants in Luthiyana. The objective of the study was to find out the parent feeling related to play. The purpose of the study was to find out the effectiveness of therapeutic play. The subjects were 200 parents of infant. The result showed that 76% parents felt that allowing a sick hospitalized infant to play with medical equipments like stethoscope was helpful is alleviating the infants pain. The study concluded that ($t=3.46$ at $p<0.05$ level) therapeutic play was effective for diversion. **(Lunas. MS, 2005)**

A study was conducted at Bangalore to evaluate the effectiveness of play as diversion on pain during invasive procedures among preschool children in a selected hospital. The subjects selected were 250 children. The results showed that about 82.5% of children had a positive effect towards therapeutic play during painful procedures. The study concluded that therapeutic play, plays a vital role in painful procedures. **(Shanty, 2005)**

A quasi experimental study was conducted to determine the effectiveness of play therapy on pain during therapeutic procedures among infants in a selected hospital, Chennai. 55 hospitalized infants were selected as the participants, faces pain rating scale was used to assess the pain during the procedures. The result showed that

the experimental group had moderate pain response with a mean score of 3.71±1.04 and the 't' value was 4.25 at $p<0.05$ level revealing that therapeutic play was effective in reducing pain during procedure. **(Mary, 2004)**

An experimental study on the value of play therapy as distraction on pain reduction during injection among infants was conducted in New Delhi. The subjects were 500 infants among which 250 were in the experimental group and 250 were in the control group. The purpose of the study was to evaluate the value of play as distraction in pain reduction. Play therapy was given to the experimental group whereas for the control group play therapy was not given. The result showed that infants had positive changes regarding therapeutic play with a mean score of 2.62±1.06. This study concluded that therapeutic play has a major value in pain reduction with a 't' value of 3.16 at $p<0.001$ level. **(Nicholos, 2004)**

An experimental study was conducted at a hospital in Zondervan to compare the distraction techniques among 100 children undergoing venepuncture and found that more children are engaged in distraction, regardless of the type of distraction stimuli, they have found that the movies were superior to all other distractors for venipuncture in 88 children ($t=4.28$ at $p<0.05$ level). **(Lases, 2004)**

A randomized study was conducted at the Kwai care centre, Phillipi to assess the effectiveness of parents of the hospitalized toddlers as a distraction guide during IV infusion. A brief distraction education intervention using kaleidoscope was given for parents prior to their toddlers pain experience with non life threatening conditions. Children who were distracted by their parents with a kaleidoscope showed decreased behavioural distress (3.28±0.73) over time than the children in control group (2.51±1.1). This reveals that parents as distraction guides was an effective intervention ($t=3.29$ at $p<0.001$ level). **(Kleberg, 2003)**

A meta analysis of 19 pediatric pain management studies using distraction have examined party blowers, non procedural talk, interactive robots, virtual reality goggles, kaleidoscopes, bubble blowing and music in pain management. Results suggested that moderate effect in signs of distress behaviour ($t=5.02$) at $P<0.001$ level, but minimal impact on self reported pain ($t=4.24$) at $P<0.05$ level. Results also indicated that distraction was more effective for children less than 7 years of age. **(Zurekh, 2003)**

A study was conducted to investigate the effectiveness of a distraction technique in reducing a child's perceived pain and behavioural distress during an acute pain experience. A convenience sample of 100 children, age 3 years to 6 months through 12 years 11 months, scheduled for routine blood draws, was randomly assigned to an experimental and control group. During venepuncture, the control subjects received standard preparation, which consisted of being comforted by physical touch and soft voices, while experimental subjects were encouraged to use a kaleidoscope as a distraction technique. Results of the MANCOVA (18.26%), with age as a covariate, indicated a significant difference between the groups. Univariate post hoc tests confirmed that the experimental group perceived less pain and demonstrated less behavioral distress than the control group. (**Vessey J.A, et.al., 2003)**

A meta analysis on Effects of Distraction on Children's Pain and Distress During Medical procedures were used to analyze 16 studies on children's distress behaviour and 10 studies on children's pain .The mean effect size for distress behaviour was 0.33 (±0.17), and the variance74% accounted for sampling and measurement error. The mean effect size for pain was 0.62 (±0.42) with 35% of the variance. Analysis of studies on pain that limited the sample to children 7 years of age

or younger increased the amount of explained variance to 60%. Distraction had a positive effect on children's distress behaviour across the populations represented in this study. The effect of distraction on children's self-reported pain is influenced by moderator variables. Controlling for age and type of painful procedure significantly increased the amount of explained variance, but there are other unidentified moderators at work. **(Kleiber, et.al., 2002)**

A study to assess the effectiveness of music distractions in reducing children's pain, fear and behavioural distress during acute pain experiences was assessed among 30 children ages 3- 6 years at the Wimbledon child care centre. The experimental group (2.56 ± 1.10) listened to cassette music of their choice during their pain experience while the control group received routine standard of care. The experimental group reported significantly lower post pain $p<0.01$ level and lower post fear at $p= 0.001$ level (3.81 ± 0.17) than the control group. **(Whiteny Lutz, 2002)**

Summary

This chapter dealt with review of literature related to procedural pain in children and non pharmacological measures for pain management.

CHAPTER III

METHODOLOGY

The methodology of research indicates the general pattern of organizing the procedure for gathering valid and reliable data for the purpose of investigation.

(Polit, D.F, and Hungler, 2003)

The present study aims to Evaluate The Effectiveness Of Kaleidoscope Vs Toy Mobile Phones As Distraction Techniques On Pain Among Children During IV Infusions At Selected Hospitals, Salem.

Research Approach

Quantitative evaluative research approach was adopted for this study.

Research Design

Quasi experimental design involves the manipulation of an independent variable. Quasi experiment lack randomization or control group feature that characterizes true experimental design. **(Polit, D.F., and Hungler, 1999)**

Quasi experimental design, in which post-test only design was used in this study to evaluate the effectiveness of kaleidoscope Vs toy mobile phones as distraction techniques on pain among children during IV infusions.

E_1	**X_1**	**O_1**
E_2	**X_2**	**O_2**

E_1: Experimental group-I

E_2: Experimental group-II

X_1: Kaleidoscope

X_2: Toy mobile phone

O_1: Post-test assessment of experimental group-I

O_2: Post-test assessment of experimental group-II

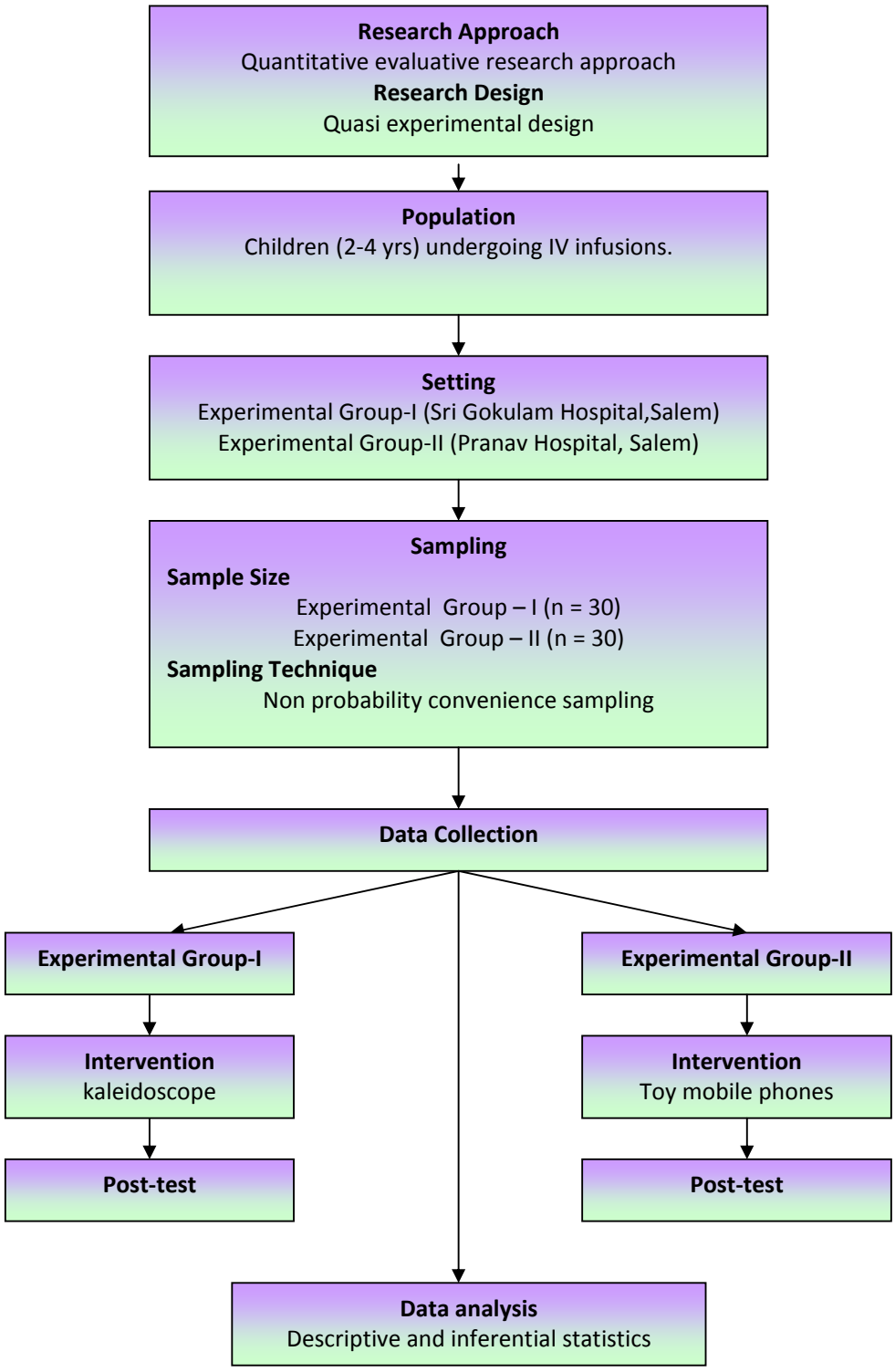

Figure – 3.1: Schematic Representation of Research Methodology

Population

Children (2-4 yrs) undergoing IV infusions.

Description of Settings

Setting is the general location and condition in which data collection takes place for the study **(Polit, D.F., and Hungler, 2003)**. The study was conducted in paediatric wards of,

1. Sri Gokulam Hospital, Salem. (Experimental group-I)
2. Pranav Hospital, Salem. (Experimental group-II)

Both the hospitals are run by private organization. There is 29 bedded paediatric ward in Sri Gokulam Hospital and 32 beds in Pranav Hospital, Salem. In Sri Gokulam hospital 4-8 children admitted per day and 7-10 children admitted per day in Pranav Hospital, Salem. These areas were selected based on,

1. Geographical proximity.
2. Availability of subjects.
3. Economy of time and money access.
4. Feasibility in terms of cooperation extended by the neonatologist and pediatrician in Pranav Hospital and Sri Gokulam Hospital, Salem, the health team members and the investigators familiarity with the setting in terms of professional experiences.

Sampling

- **Sample**

  The sample of the study comprises of children 2-4 years of age in the selected hospitals.

- **Sample size**

The sample size was 60 children, 30 children in experimental group-I from Sri Gokulam Hospital, Salem and 30 children in experimental group-II from Pranav Hospital.

- **Sampling technique**

Sampling refers to the process of selecting the portion of population to represent the entire population**. (Polit, D.F, and Hungler, 2003)**

Non-Probability convenience sampling is also known as accidental sampling. The major reason is administrative convenience and the sample is chosen with ease of access being the sole concern. Non-Probability convenience sampling technique was adopted for selecting the samples for the study. The samples were selected based on the availability.

- **Criteria for sample selection**

Inclusion criteria

Children

- admitted in selected hospital, Salem.
- between 2 and 4 years of age.
- undergoing IV infusions and
- who understand and speak in Tamil and English.
- whose mothers have given consent for them to participate in the study.

Exclusion criteria

Children

- who are critically ill
- who do not have visual coordination and
- with hearing problems

Variables

Independent variable:

Distraction techniques such as toy mobile phone and Kaleidoscope.

Dependent variable:

Level of pain among children during IV infusions.

Description of the Tool

It consists of following sections,

Section-I

This section consists of demographic data like age of the baby, sex of the baby, weight of the baby, previous hospitalization experience, presence of caregiver has undergone any other invasive procedure during present hospitalization and duration of hospital stay.

Section-II

This section deals with Pain Observation Scale to assess the effectiveness of distraction techniques on pain.

It includes, facial expression, cry, torso, breathing, arms and fingers, legs and toes and arousal.

Scoring procedure

The Pain Observation Scale consists of 7 parameters, all the parameters relating to pain have a score 1 and those not relating to pain have a score 0.

Sl No	Level Of Pain	Pain Score
1	Mild Pain	0 - 2
2	Moderate Pain	3 - 4
3	Severe Pain	5 - 7

Validity and Reliability of the Tool

Validity:

Validity is the quality of a data gathering instrument or procedure that enables it to measure what it is supposed to measure. **(John. W. Best and James V. Kahn, 2002)**

The Pain Observation Scale was sent along with statement of the problem, objectives and hypotheses, to 2 medical experts in the field of Neonatology and Pediatrics and Five Nursing Experts (Child Health Nursing Specialist) for validating the tool.

Reliability:

Reliability is a degree of consistency and accuracy with which an instrument measures the attribute for which it is designed to measure. **(Ram Ahuja, 2002)**

Reliability of the tool was determined by inter rater method among 10 children in S.K.S Hospital and Bhavani Hospital The reliability coefficient obtained for this study was r = 0.8, which shows that the tool was reliable. Hence the tool was considered for proceeding.

Pilot Study

Pilot study was conducted from 27.06.11 to 03.07.11 in S.K.S Hospital and Bhavani Hospital, Salem to assess effectiveness of distraction techniques on pain among children during IV infusions. The samples for the first experimental group were selected from SKS hospital and they were given a Kaleidoscope at the onset of the procedure and were motivated to play during the procedure. The samples for the second experimental group were selected from Bhavani hospital and they were given a toy mobile phone at the onset of the procedure and were motivated to play during

the procedure. The data were collected through Pain Observation Scale. The children chosen were similar in characteristic to those of the population under the study.

Based on the pilot study necessary corrections were made in the statement and demographic variables. The tool was found feasible and practicable. Parents of the children easily followed the instruction and cooperated. It also helped to select suitable statistical method for analysis.

Method of Data Collection

Ethical consideration

Written permission was obtained from the authority of the selected hospitals. Informed verbal consent was taken from parents of the children, who were willing to participate in the study.

Period of data collection

Data was collected over a period of 4 weeks from 11-07-2011 to 07-08-2011.

Data collection procedure

The investigator introduced herself and explained the purpose of the study and its importance to the caregivers of children undergoing IV infusion. The first experimental group children were selected from Sri Gokulam Hospital, Salem and second experimental group children were selected from Pranav Hospital, Salem. The investigator gave kaleidoscope to the children in the experimental group I at the onset of the procedure and motivated to play during the procedure and the pain level was assessed using pain observation scale during the procedure. The children in experimental group II were given toy mobile phones at the onset of the procedure and motivated to play during the procedure and the level of pain was assessed using the same scale during the procedure.

Plan for Data Analysis

The data will be collected, arranged and tabulated. Independent ‘t’ test will be used to find out the effectiveness of kaleidoscope versus toy mobile and chi-square will be used to associate the effectiveness of distraction techniques with the demographic variables.

Summary

This chapter consists of research approach, research design, population, description of the setting, sampling, variables, description of the tools, validity and reliability, pilot study, method of data collection, and planned for data analysis.

CHAPTER IV

DATA ANALYSIS AND INTERPRETATION

Analysis is the process of the organizing and synthesizing data in such a way that question can be answered and hypothesis tested. **(Polit, D.F., and Hungler, 2003)**

This chapter deals with the analysis and interpretation of data to Evaluate the Effectiveness of Kaleidoscope Vs Toy mobile as distraction techniques on pain among children during IV infusions in selected hospitals, Salem.

The findings are presented under the following sections

Section-A:

Distribution of children according to their selected demographic variables in experimental group I and II.

Section-B:

a) Comparison of pain levels of children after intervention in experimental groups I and II.
b) Comparison of mean, standard deviation, mean percentage and difference in mean percentage of level of pain in experimental groups I and II.
c) Comparison of mean, standard deviation, mean percentage and difference in mean percentage of level of pain among children with their selected demographic variables.

Section-C: Hypotheses testing

a. Effectiveness of Kaleidoscope Vs Toy mobile as distraction techniques on pain among children during IV infusions in experimental groups I and II.
b. Association of the level of pain among children in experimental groups I and II with their selected demographic variables.

Section- A

Distribution of children according to their selected demographic variables in experimental groups I and II.

Table.4.1: **n=60**

Sl. No	Demographic variables	Experimental group I(n=30)		Experimental group II(n=30)	
		f	%	f	%
1.	Age				
	a) 2 – 3 yrs	18	60	14	46.7
	b) 3.1 – 4 yrs	12	40	16	53.33
2.	Gender				
	a) Male	19	63.3	13	43.3
	b) Female	11	36.7	17	56.67
3.	Weight in kgs				
	a) below 12	5	16.67	4	13.3
	b) 12.1 – 14	13	43.33	9	30
	c) 14.1 – 16	7	23.33	10	33.33
	d) 16.1 – 18	5	16.67	6	20
	e) above 18	0	0	1	3.33
4.	Presence of caregiver				
	a) Mother	11	36.67	12	40
	b) Father	12	40	10	33.33
	c) Others	7	23.33	8	26.67
5.	Previous hospitalization experience				
	a) Yes	12	40	13	43.33
	b) No	18	60	17	56.67
6.	Has undergone any other invasive procedure during present hospitalization				
	a) Yes	13	43.33	16	53.33
	b) No	17	56.67	14	46.67
7	No of days of hospitalization				
	a)1	30	100	30	100
	b) 2	-	-	-	-
	c)more than 2	-	-	-	-

Distribution of children according to their age shows that in experimental group I, majority of children 18(60%) were between 2-3 years of age and 12(40%) were between 3.1-4 years of age. In experimental group II 14(47%) were between 2-3 years of age and 16(53.33%) were between 3.1-4 years of age. This reveals that the highest percentage of children were between 2-3 years of age in experimental group I and were between 3.1-4 years in experimental group II. (Table-4.1)

Distribution of children in experimental groups I and II according to their gender depicts that in experimental group I majority 19(63.33%) of children were male and 11(36.7%) were females whereas in experimental group II 13(43.33%) were males and 17(56.67%) were females. This reveals that highest percentage of children were males in experimental group I and were females in experimental group II. (Table-4.1)

Distribution of children in experimental groups I and II according to the weight indicates that in experimental group I, the highest percentage of children 13(43.33%) were between 12.1-14 kg. Where as in experimental group II highest number of children 10(33.33%) were between 14.1-16 kg. (Table-4.1)

Distribution of children in experimental groups I and II according to the presence of caregiver shows that in experimental group I 11(36.67%) children had mothers as their caregiver, 12(40%) had fathers as their caregiver and 7(23.33%) had others as their caregiver. In experimental group II 12(40%) had mothers as their caregiver, 10(33.3%) had fathers as their caregiver and 8(26.67%) had others as their caregiver. This reveals that highest percentage of caregivers were parents in both the groups. (Table-4.1)

Distribution of children in experimental groups I and II according to their previous hospitalization experience reveals that in experimental group I 12(40%) had previous hospitalization experience and majority of the children 18(60%) did not have hospitalization experience whereas in experimental group II 13(43.3%) had previous hospitalization experience and 17(56.67%) did not have any previous hospitalization experience. This reveals that highest percentage of children did not have previous hospitalization experience in both the groups. (Table-4.1)

Distribution of children in experimental groups I and II based on the invasive procedures undergone during present hospitalization depicts that in experimental group I 16(53.33%) had undergone invasive procedures and 14(46.67%) had not undergone any other invasive procedures whereas in experimental group II 13(43.33%) had undergone invasive procedures and 17(56.67%) had not undergone any invasive procedures. This reveals that the highest percentage of children in experimental group I had undergone invasive procedures whereas in experimental group II they had not undergone any invasive procedures during present hospitalization. (Table-4.1)

Distribution of children in experimental groups I and II according to the number of the days of hospitalization shows that in both the groups all the children were in the first day of hospitalization. (Table-4.1)

Section-B

a) Comparison of pain levels after intervention in experimental groups I and II

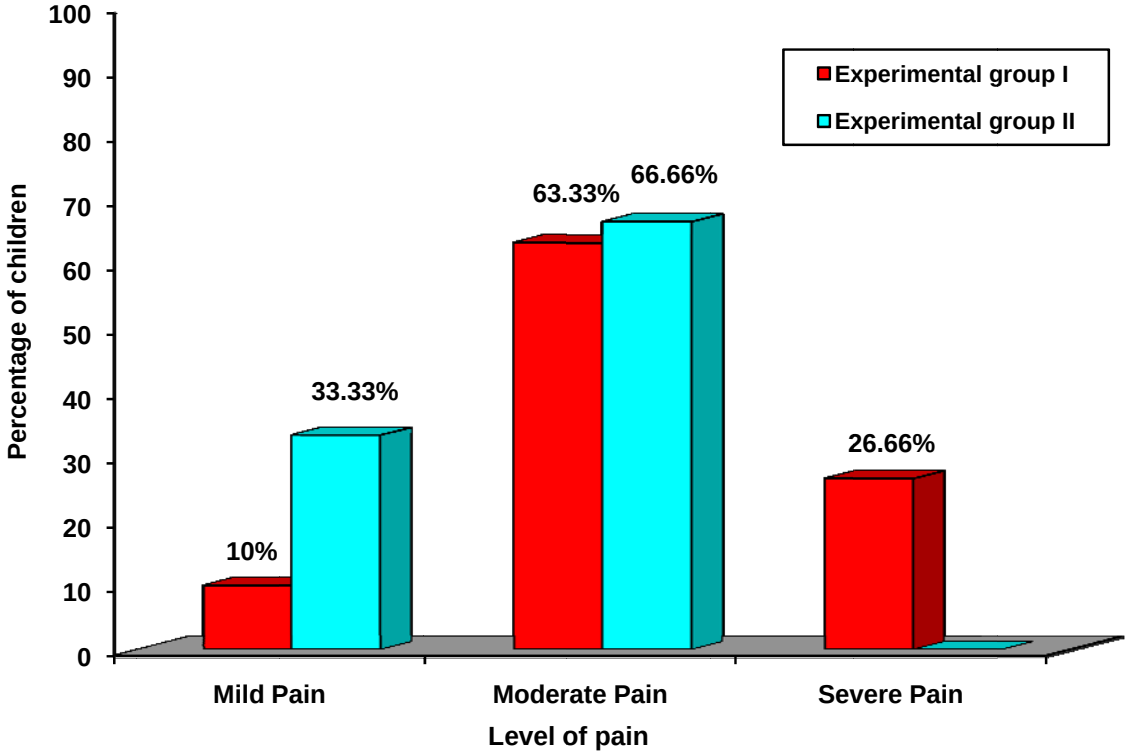

Figure 4.1: Distribution of children in experimental groups I and II according to their level of pain.

The above figure on level of pain among children in experimental groups I and II reveals that in experimental group I 3(10%) of children had mild pain, majority of children 19(63.33%) in experimental group I and experimental group II 20(66.66%) had moderate level of pain. However none of the children had severe pain in experimental group II whereas in experimental group I 8(26.66%) had severe pain.

Table-4.2:

b) Comparison of mean, standard deviation, mean percentage and difference in mean percentage of pain among children in experimental groups I and II

n=60

S. No	Group	Post-test Level of Pain			
		Mean	SD	Mean %	Difference in mean %
1	Experimental group – I	3.58	1.15	54.28	15.28
2	Experimental group-II	2.73	0.94	39	

The above table on mean, standard deviation and mean percentage and difference in mean percentage on pain reveals that mean score for experimental group I was 3.58±1.15, which was 54.28% of total score, whereas for experimental group II the mean score was 2.73±0.94 which was 39% of the total score, revealing a difference of 15.28%.

c) Comparison of mean, standard deviation and mean score percentage of level of pain of children with their selected demographic variables

Table 4.3:

Mean, standard deviation and mean score percentage of level of pain of children according to their age.

n=60

Age in years	Experimental group I				Experimental group II				Difference in mean %
	f	Mean	SD	Mean %	f	Mean	SD	Mean %	
2-3 years	18	4	1	57.14	14	2.86	0.90	40.86	16.28
3.1-4 years	12	3.08	2	44	16	2.62	0.99	37.42	6.58
Overall	**30**	**3.58**	**1.15**	**54.28**	**30**	**2.73**	**0.94**	**39**	**15.28**

The above table shows that a higher mean score of (4±1), which is 57.14% and (14±2.86), which is 40.86% where obtained by 2-3 years old children in experimental groups I and II respectively, where the difference in mean percentage was also highest.

However, a lower mean score the (3.08 ± 2) which is 44% and (2.62±0.99) which is 37.42% were obtained by 3.1 – 4 years old children. It reveals a lower difference in mean percentage 6.58%.

Table 4.4:

Mean, Standard deviation and mean score percentage of level of pain of children according to their gender

n=60

Gender	Experimental group I				Experimental group II				Difference in mean %
	f	Mean	SD	Mean %	f	Mean	SD	Mean %	
Male	19	3.94	1.34	56.29	13	2.84	1.4	40.57	15.72
female	11	3.54	0.68	50.57	17	2.56	1.10	36.57	14
Overall	**30**	**3.58**	**1.15**	**54.28**	**30**	**2.73**	**0.94**	**39**	**15.28**

The above table shows that in both experimental groups I and II higher mean score (3.94±1.34) and (2.84±1.4) which is 56.29% and 40.57% of the total score respectively was obtained by male children whose difference in mean percentage was also the higher (15.72%), and the lower mean score (3.54±0.68) and (2.56±1.10) which is 50.57% and 36.57% of total score respectively was obtained by female children revealing a lower difference in percentage (14%).

Table 4.5:

Mean, Standard deviation and Mean score percentage of level of pain of children according to their weight

n=60

Weight in kg	Experimental group I				Experimental group II				Difference in mean %
	F	Mean	SD	Mean %	f	Mean	SD	Mean %	
<12	5	3.8	1.32	54.29	4	3.25	0.83	46.43	7.86
12.1-14	13	4.07	1.02	58.14	9	2.56	0.84	36.57	21.57
14.1-16	7	3.71	1.04	53	10	2.9	0.83	41.43	11.57
16.1-18	5	3.2	1.17	45.7	6	2.5	1.11	35.71	9.99
>18	0	0	0	0	1	2	0	28.57	28.57
Overall	**30**	**3.58**	**1.15**	**54.28**	**30**	**2.73**	**0.94**	**39**	**15.28**

The above table shows that in experimental group I, the higher mean score 4.07±1.02, which is 58.14% of the total score was obtained by children between 12.1 -14 kg, the lower mean score 3.2± 1.17, which is 45.7% of the total score was obtained by children between 16.1 – 18kg.

However in experimental group II, the higher mean score 3.25±0.83, which is 46.43% of the total score was obtained by children less than 12kg, and lower mean sore 2.5±1.11, which is 35.71% of the total score was obtained by children between 16.1-18 kg.

The highest difference in mean percentage was obtained by children between 12.1-14kg.

Table 4.6:

Mean, Standard deviation and Mean score percentage of level of pain of children according to the presence of care giver.

n=60

Presence of care giver	Experimental group I				Experimental group II				Difference in mean %
	f	Mean	SD	Mean %	f	Mean	SD	Mean %	
Mother	11	3.54	0.81	50.57	12	2.58	1.04	36.86	13.71
Father	12	4.33	1.38	61.86	10	2.8	0.6	40	21.86
Others	7	3.28	0.73	46.86	8	2.87	1.03	41	5.86
Overall	**30**	**3.58**	**1.15**	**54.28**	**30**	**2.73**	**0.94**	**39**	**15.28**

The above table shows that in experimental group I the highest mean score (4.33±1.38) which was 61.86% for the children who had fathers as their caregivers, and the lowest mean score (3.28± 0.73) which was 46.86% of the total score was for children who had others as their caregivers, where the difference in mean percentage was also higher (21.86%).

Table 4.7:

Mean, standard deviation and mean score percentage of level of pain of children according to previous hospitalization experience.

n=60

Previous hospitalization experience	Experimental group I				Experimental group II				Difference in mean %
	f	Mean	SD	Mean %	f	Mean	SD	Mean %	
Yes	12	3.41	0.97	48.71	13	2.62	1.06	37.42	11.29
No	18	4.05	0.99	57.86	17	2.83	0.79	40.43	17.43
Overall	**30**	**3.58**	**1.15**	**54.28**	**30**	**2.73**	**0.94**	**39**	**15.28**

The above table shows that in both groups the higher mean score 4.05 ± 0.99, which was 57.86% of the total score and 2.83±0.79 which was 40.43% of the total score respectively was obtained by children who have not had any previous hospitalization experience revealing highest difference in mean percentage (17.43%).

Table 4.8:

Mean, standard deviation and mean score percentage of level of pain of children according to any other invasive procedures undergone during present hospitalization.

n=60

Invasive procedures undergone	Experimental group I				Experimental group II				Difference in mean %
	f	Mean	SD	Mean %	f	Mean	SD	Mean %	
Yes	16	3.5	0.93	50	13	2.77	0.92	39.57	10.43
No	14	4.14	1.25	59.14	17	2.70	0.96	38.57	20.57
Overall	**30**	**3.58**	**1.15**	**54.28**	**30**	**2.73**	**0.94**	**39**	**15.28**

The above table shows that in experimental group I the lowest mean score 3.5±0.93, which is 50% of the total score was obtained by children who had undergone invasive procedures and in experimental group II the lowest mean score 2.70±0.96, which is 38.57% of the total score was obtained by children who did not undergo invasive procedures.

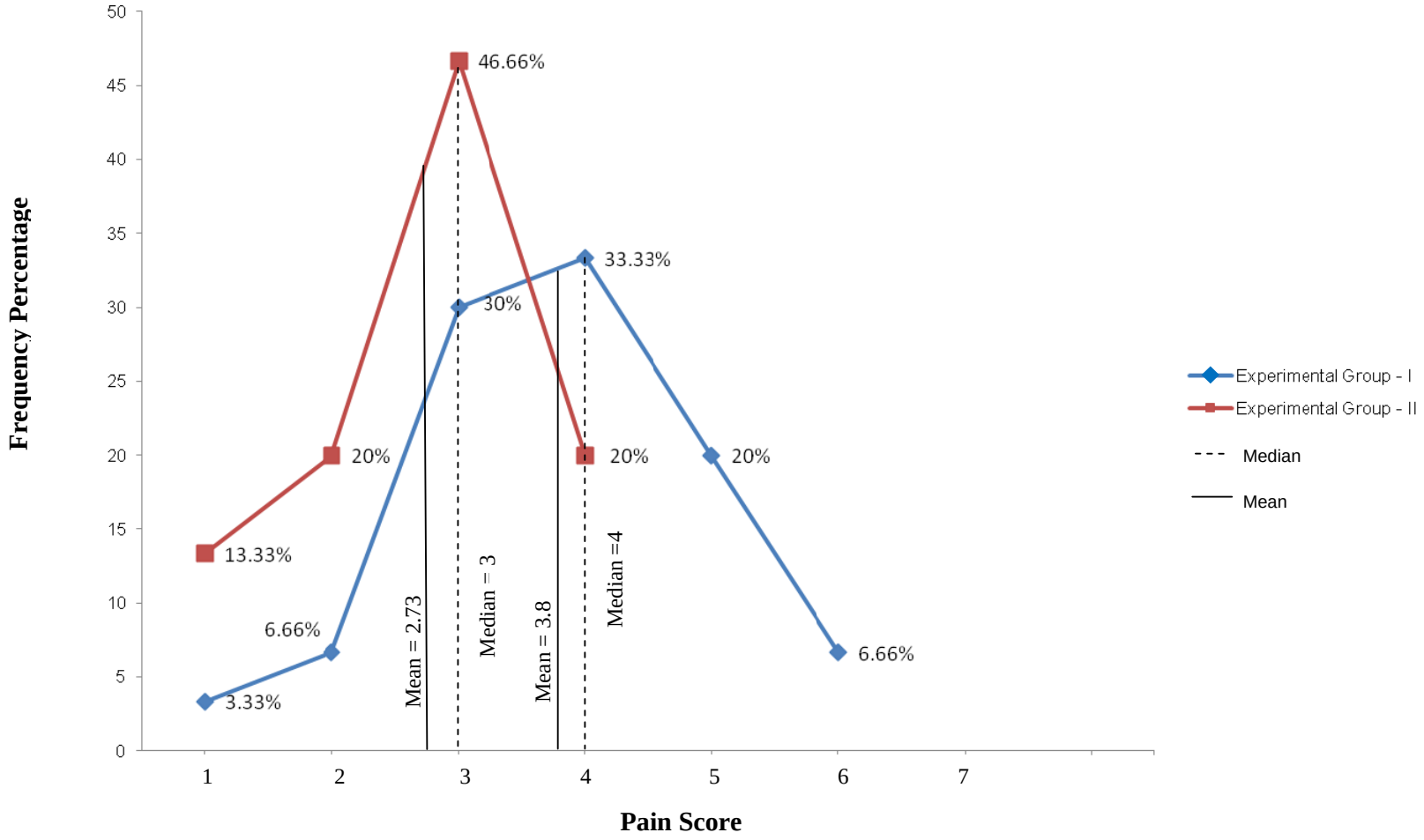

Fig. 4.2: Line graph showing comparison of pain scores of children in experimental group - I and II.

Line graph showing the comparison of experimental group I (kaleidoscope) and experimental group II (toy mobile), the highest score for experimental group I is 6 and in experimental group II it is 4, where as the lowest score (1) is same in both the groups.

The mean and median plotted on the graph shows that for experimental group I mean is 3.8 and median is 4 and in the experimental group II mean is 2.73 and median is 3.This shows the effectiveness of toy mobile as distraction for pain. (Figure. 4.2)

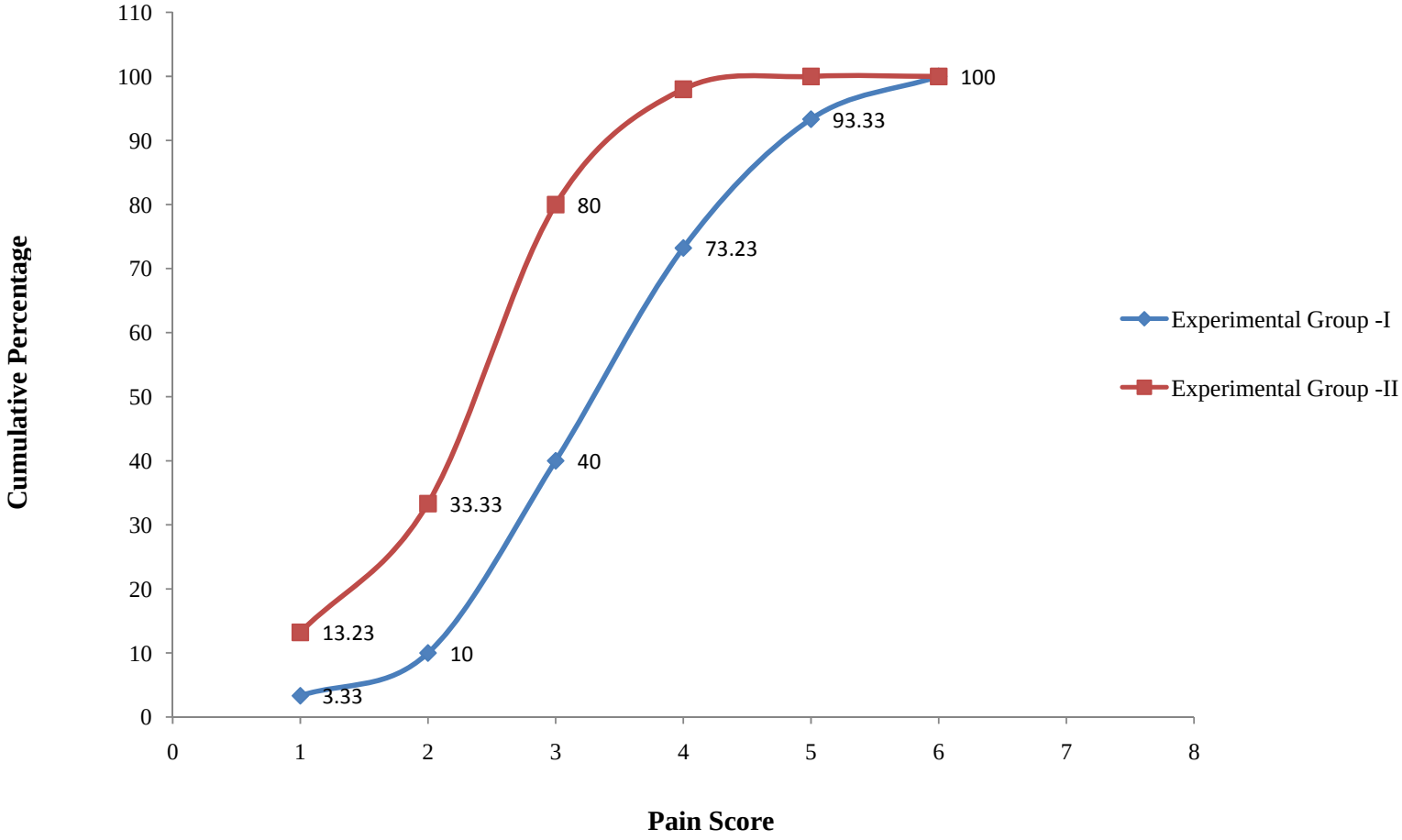

Fig. 4.3: O-Give curve showing comparison of level of pain scores of children in experimental gro and II.

O-give curve showing the comparison of cumulative percentage of pain score of children in experimental groups I and II reveals that, the O-give of experimental group I lie to the right of experimental group II over the entire range indicating that the pains scores of experimental group I are higher when compared to experimental group II.

In the experimental group I, 25^{th} percentile score is 2.5 where as it is 1.7 for the experimental group II. The 50^{th} percentile score for experimental group I is 3.2 which is 2.3 for experimental group II. The 75^{th} percentile score is 4 in experimental group I where as it is 2.8 for the experimental group II. It shows that the difference in scores of pain in experimental group I in all the three quartiles are higher than experimental group II, indicating a considerable reduction in pain among children who are distracted using toy mobile. (Figure. 4.3)

Section-C

Hypotheses Testing

H_1: There is significant difference on the level of pain during IV infusions among children in experimental groups I and II at $P \leq 0.05$ level.

Table -4.9:

c) Effectiveness of kaleidoscope and toy mobile as distraction techniques on level of pain among children in experimental groups I and II.

n=60

S. No	Groups	Posttest			
		Mean	SD	t value	Table value
1	Experimental group – I	3.58	1.15	4.25*	2.01
2	Experimental group-II	2.73	0.94		

*** Significant (p<0.05)**

The above table shows that significant difference is found in the post test mean values of level of pain among experimental group I and II. The mean values of post test of experimental group II was lower than experimental group I revealing that toy mobile was more effective compared to kaleidoscope in reducing the pain among children. Hence the research hypothesis H_1 is retained. (P<0.05 level)

H_2: There is significant association between the level of pain of children in experimental groups I and II with their demographic variables at $P \leq 0.05$ level.

Table-4.10:

b) Association of the level of pain among children in experimental group-I &II with their selected demographic variables.

n=60

S. No	Demographic variables	Experimental group-I n=30			Experimental group-II n=30		
		df	χ^2	Table value	df	χ^2	Table value
1.	Age	2	1.67	5.99	2	0.27	5.99
2.	Gender	2	5.85	5.99	2	0.06	5.99
3.	Weight	8	4.81	15.51	8	3.43	15.51
4.	Presence of care giver	4	8.7	9.49	4	0.10	9.49
5.	Previous hospitalization experience	2	1.67	5.99	2	0.26	5.99
6	Has undergone any other invasive procedures during present hospitalization	2	4.73	5.99	2	0.26	5.99

*** Significant at p<0.05 level**

The above table shows that in both the groups, there is no significant association between the level of pain and the demographic variables. This reveals that both the distraction techniques are effective, irrespective of the demographic variables. Hence the research hypothesis H_2 is rejected. ($P<0.05$ level)

Summary

This chapter dealt with data analysis and interpretation based on the objectives. Frequency and percentage distribution of children was done based on their selected demographic variables. The independent ‘t’ test was used to compare the effectiveness of kaleidoscope Vs toy mobile on level of pain. The chi-square analysis was used to find out the association between the level of pain with their selected demographic variables.

CHAPTER V

DISCUSSION

The Quasi experimental study was done to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain among Children during IV Infusions at Selected Hospitals, Salem.

The findings of the study have been discussed with reference to the objectives, relevant study from the review of literature.

Distribution of children according to their selected demographic variables in experimental group I & II

- Highest percentage of children were between 2-3 years of age in experimental group I and were between 3.1-4 years in experimental group II.

  The census result of 2011 shows that the child population between the age group of 0-6 years is 35,42,351 and 33,52,470 respectively for male and female. **(Revenue Department, Government of India,2011)**

- Highest percentage of children were males in experimental group I and were females in experimental group II.

  The census result of 2011 shows the sex ratio in Tamilnadu as 1000 girls for 1000 boys and in India the ratio is 995 girls for 1000 boys. **(Revenue Department, Government of India,2011)**

- In experimental group I, the highest percentage of children 13(43.33%) were between 12.1-14 kg and in experimental group II highest number of children 10(33.33%) were between 14.1-16 kg.

- In experimental group I 12(40%) had fathers as their caregiver and in experimental group II 12(40%) had mothers as their caregiver.

- In experimental group I majority of the children 18(60%) did not have hospitalization experience whereas in experimental group II 17(56.67%) did not have any previous hospitalization experience.
- In experimental group I 16(53.33%) had undergone invasive procedures whereas in experimental group II 17(56.67%) had not undergone any invasive procedures. In both the groups all the children were in the first day of hospitalization.

The first objective was to assess the pain among children in experimental groups I and II during IV Infusions.

Mean score for experimental group I was 3.58±1.15, which was 54.28% of total score, whereas for experimental group II the mean score was 2.73±0.94 which was 39% of the total score, revealing a difference of 15.28%.

The present study was supported by a descriptive study conducted by **Sagarika Mohanty, (2007)** on the procedural pain of children. 150 children between 2- 6 years of age who were hospitalized at SAIMS Hospital, Indore, Madhya Pradesh were selected as the samples. The results showed that about 89% of the children did experience pain with a mean score of 4.62 revealing that children experience much pain due to routine hospital procedure.

The second objective was to compare the effectiveness of distraction techniques on pain among children in experimental groups I and II .

Significant difference was found in the post test mean values of level of pain among experimental group I and II. The mean values of post test of experimental group II was lower than experimental group I revealing that toy mobile was more effective compared to kaleidoscope in reducing the pain among children.

The present study was supported by **Dr.Kuldeep Singh, (2005)** at Bandari Children's Hospital, Ujjaini. The aim of the study was to assess the effect of auditory music as distraction for reducing distress during painful injections. 80 samples were selected for this study. The samples included were below 5 years of age and the results show that children who were distracted by music (mean score of 6±1.12) perceive less pain (t = 4.16) at P<0.05 level than children in the control group.

The third objective was to associate the level of pain among children during IV infusions with their selected demographic variables.

In my study, there is no significant association between the level of pain and the demographic variables. This reveals that both the distraction techniques are effective, irrespective of the demographic variables. Hence the research hypothesis H_2 is rejected. (P<0.05 level)

The present study supported by an experimental study conducted at Tumkur, to use play therapy as distraction among 75 toddlers undergoing immunization. The findings of the study concluded that there was a considerable reduction in pain (mean score of 3 ± 43) and there was no association between the level of pain and their selected demographic variables. **(Nanjunda Gowda, 2005)**

Summary

This chapter dealt with discussion of the study with the difference of objectives and supportive study.

CHAPTER VI

SUMMARY, CONCLUSION, IMPLICATIONS AND RECOMMENDATIONS

This chapter consists of four sections. In the first two sections, the summary and conclusion are presented. In the last two sections, the implications for nursing practice and the recommendations for further research are presented.

Summary

A quasi experimental study was conducted to evaluate the effectiveness of kaleidoscope vs toy mobile on level of pain among children in experimental group I and II among 60 children selected by non-probability convenience sampling technique and pain observation scale was used to assess the level of pain. Findings were analysed by using descriptive and inferential statistics. The conceptual framework was used based on “Wiedenbach’s Helping Art of Clinical Nursing Theory”.

The major findings are summarized as follows

- Highest percentage of children were between 2-3 years of age in experimental group I and were between 3.1-4 years in experimental group II.
- Highest percentage of children were males in experimental group I and were females in experimental group II.
- In experimental group I, the highest percentage of children 13(43.33%) were between 12.1-14 kg, where as in experimental group II highest number of children 10(33.33%) were between 14.1-16 kg.
- Highest percentage of caregivers were parents in both the groups.
- Highest percentage of children did not have previous hospitalization experience in both the groups.

- Highest percentage of children in experimental group I had undergone invasive procedures whereas in experimental group II they had not undergone any invasive procedures during present hospitalization.
- Distribution of children in experimental groups I and II according to the number of the days of hospitalization shows that in both the groups all the children were in the first day of hospitalization.
- Level of pain among children in experimental groups I and II reveals that in experimental group I 3(10%) of children had mild pain, majority of children 19(63.33%) in experimental group I and experimental group II 20(66.66%) had moderate level of pain. However none of the children had severe pain in experimental group II whereas in experimental group I 8(26.66%) had severe pain.
- Mean score for experimental group I was 3.58±1.15, which was 54.28% of total score, whereas for experimental group II the mean score was 2.73±0.94 which was 39% of the total score, revealing a difference of 15.28%.
- Significant difference was found in the post test mean values of level of pain among experimental groups I and II.
- In both the groups, there was no significant association between the level of pain and the demographic variables.

Conclusion

This comparative study was to evaluate the effectiveness of kaleidoscope vs toy mobile phones on level of pain among children in selected hospitals, Salem. The findings of the study showed that the toy mobile phone was more effective in distracting the pain of children. There was no association between the level of pain and demographic variables. As non pharmacological measures are effective in

distracting pain of children without any complications it can be adopted by every health care professional to reduce the pain of the little children.

Implications

The findings of the study have implications in different branches of nursing (i.e) nursing practice, nursing education, nursing administration and nursing research by evaluating the effectiveness of kaleidoscope vs toy mobile phones on level of pain among children. The investigator received a clear picture regarding the different steps to be taken in different fields to improve the same.

Nursing practice:

- Non pharmacological measures of reducing pain are cost effective and best means of pain relief which can be practiced easily during painful procedure.
- Pediatric nurses can use the various distraction techniques to reduce pain in their day to day activities.
- Student nurses can use this intervention to distract children.

Nursing education:

- The parents can be taught about the use of distractions whenever the child needs to be comforted.
- Non pharmacological measures of pain management such as distraction can be given more importance in the syllabus of the students.
- Continuing education on various distraction techniques can be included for nurses.

Nursing administration:

- The nurse administrator participates in the nursing care of children by practicing and supervising the distraction techniques.

- Nursing administrator should organize in service education programme regarding the effectiveness of distraction techniques on level of pain for staff nurses.
- Nurse administrator can encourage the staff nurses to practice nonpharmacological methods of distraction.

Nursing research:

- The study will be a strong source of evidence based practice
- The finding of the present study can be disseminated at various conference proceedings.

Recommendations

- A similar study can be conducted on a large sample to generalize the findings.
- A similar study can be replicated in different settings.
- A comparative study can be conducted between different musical toys and party blowers.
- A study can be done to assess the knowledge and practices of distraction among health care professionals in the hospital.
- A study can be done to assess the effectiveness of structured teaching programme on distraction techniques among nurses.

Summary

This chapter dealt with summary, conclusion, implications for nursing practice and recommendation.

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ANNEXURE - A

LETTER SEEKING PERMISSION TO CONDUCT A RESEARCH STUDY

From

Ms. Mercy Suguna.E,

Final Year, M.Sc., (N)

Sri Gokulam College of Nursing,

Salem, Tamil Nadu.

To

The Principal,

Sri Gokulam College of Nursing,

Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project - request- reg.

I**, Mercy Suguna.E,** Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is conducting research project in partial fulfilment of Tamil Nadu Dr.M.G.R. Medical University, Chennai, as a part of the requirement for the award of M.Sc., (Nursing) Degree.

Topic: "A Study to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain among Children during IV Infusions at Selected Hospitals, Salem".

I request you to kindly do the needful.

Thanking you.

Date : 11.07.11

Yours sincerely,

Place : Salem

(MERCY SUGUNA.E)

ANNEXURE - B

LETTER GRANTING PERMISSION TO CONDUCT A RESEARCH STUDY

SRI GOKULAM COLLEGE OF NURSING
3/836, Periyakalam, Neikkarapatti, Salem - 636 010.
Phone : 0427 - 6544550 Fax : 0427 - 2270200, 2447077
Email : sgcon2001@yahoo.com, sgcon2001@gmail.com

Date : .....

From

Ms. Mercy Suguna.E,
Final Year, M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To

The Managing Director,
Pranav Hospital,
Salem.

Through

The Principal,
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

Respected Sir/Madam,

Sub: Permission to conduct research project - request- reg.

I**, Mercy Suguna.E,** Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, is conducting research project in partial fulfilment of Tamil Nadu Dr.M.G.R. Medical University, Chennai, as a part of the requirement for the award of M.Sc., (Nursing) Degree.

Topic: "A Study to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain among Children during IV Infusions at Selected Hospitals, Salem".

Kindly permit to conduct a research project in your hospital from 11.07.11 to 07.08.11 with adherence to the hospital policies and regulations.

Thanking you.

Yours Obediently,
M. Paul Dinagaran
(M.Pauldinagaran)

Place : Salem
Date : 11.7.11

Madam, Kindly do the needful.
11/7/11
PRINCIPAL
Sri Gokulam College of Nursing
SALEM – 636 010.

Permission given
SRI RAAMA

ANNEXURE - C

LETTER REQUESTING OPINION AND SUGGESTIONS OF EXPERTS FOR CONTENT VALIDITY OF THE RESEARCH TOOLS

From

Ms.Mercy Suguna.E,
Final Year M.Sc., (N)
Sri Gokulam College of Nursing,
Salem, Tamil Nadu.

To,

Respected Sir/ Madam,

Sub: Requesting opinion and suggestions of experts for establishing content validity of the tools.

I, **Ms**.**Mercy Suguna.E**, a Final Year M.Sc., (Nursing) student of Sri Gokulam College of Nursing, Salem. I have selected the topic mentioned below for the research project to be submitted to The Tamil Nadu Dr. M.G.R. Medical University, Chennai for the partial fulfilment of Master's Degree in Nursing.

Topic: "A Study to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain Among Children during IV Infusions at Selected Hospitals, Salem".

I wish to request you kindly validate the tool and give your expert opinion for necessary modification. I will be grateful to you for this.

Thanking you

Yours sincerely,

Place : Salem

Date : **(Mercy Suguna.E)**

Enclosed:

1. Certificate of validation
2. Criteria checklist of evaluation of tool
3. Tool for collection of data
4. Procedure

ANNEXURE - D

TOOL FOR DATA COLLECTION

SECTION –A: DEMOGRAPHIC VARIABLE

1) Age

   a) 2 – 3 years [ ]

   b) 3.1 – 4 years [ ]

2) Gender

   a) Male [ ]

   b) Female [ ]

3) Weight

   a) Below 12 kgs [ ]

   b) 12.1 – 14 kgs [ ]

   c) 14.1 – 16 kgs [ ]

   d) 16.1 – 18 kgs [ ]

   e) Above 18 kgs [ ]

4) Presence of caregiver

   a) Mother [ ]

   b) Father [ ]

   c) Others [ ]

5) Previous hospitalization experience

   a) Yes [ ]

   b) No [ ]

6) Has undergone any other invasive procedures during present hospitalization

   a) Yes [ ]

   b) No [ ]

7) Number of days of hospitalization

   a) 1 [ ]

   b) 2 [ ]

   c) More than 2 [ ]

SECTION –B

OBSERVATION PAIN SCALE

PARAMETERS	FINDINGS	POINTS
FACIAL EXPRESSION	NEUTRAL	0
	GRIMACE (NEGATIVE)	1
CRY	NO CRY	0
	MOAN, SCREAM	1
BREATHING	RELAXED AND REGULAR	0
	IRREGULAR AND INDRAWN	1
TORSO	AT REST RELAXED	0
	TENSE RESTLESS	1
ARMS AND FINGERS	AT REST RELAXED	0
	TENSE RESTLESS	1
LEGS AND TOES	AT REST RELAXED	0
	TENSE RESTLESS	1
AROUSAL	CALMY SLEEPY	0
	FUSSY	1

Interpretation:

Minimum Score : 0

Maximum Score : 7

Mild pain : 0 – 2

Moderate pain : 2 – 4

Severe pain : 4 – 7

PROCEDURE FOR DISTRACTION

KALEIDOSCOPE Vs TOY MOBILE PHONES AS DISTRACTION TECHNIQUES

KALEIDOSCOPE:

A toy made of cylindrical glass pieces and pebbles which shows colourful images**.**

ARTICLES NEEDED:

Kaleidoscope

PROCEDURE:

- Explain the procedure to parents.
- Obtain consent from the parents.
- At the onset of the procedure give kaleidoscope to the child and motivate the child to play during procedure.
- Observe the child for pain reactions during procedure using the observation pain scale.

TOY MOBILE PHONE:

A toy mobile phones which produces sound.

ARTICLES NEEDED:

Toy Mobile phone

PROCEDURE:

- Explain the procedure to the parents.
- Obtain consent from the parents
- At the onset of the procedure give toy mobile to the child and motivate the child to play during procedure.
- Observe the child for pain reaction during procedure using the observation pain scale.

ANNEXURE – E

CERTIFICATE OF VALIDATION

This is to certify that the tool developed by **Ms. MERCY SUGUNA. E**, Final year M.Sc. Nursing student of Sri Gokulam College of Nursing, Salem (affiliated to Dr.M.G.R. Medical University) is validated and can proceed with this tool and content for the main study entitled **"A Study to Evaluate the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain Among Children during IV Infusions at Selected Hospitals, Salem".**

Signature with Date

ANNEXURE - F

LIST OF EXPERTS

1. **Dr. R. Ramalingam, M.D., DCH., F.A.A.P. (USA)**
   Pediatric Consultant,
   Sri Gokulam Hospital, Salem.
2. **Dr. Srinivasan, M.D., DCH.,**
   Pediatric Consultant,
   PranavHospital, Salem.
3. **Prof. Dr. Maheswari, Ph.D (N).,**
   Vice Principal,
   Vinayaka Mission Annapoorna College of Nursing
   Salem.
4. **Mrs.Shanmugapriya , M.Sc (N).,**
   Assistant Professor,
   Department of Child Health Nursing,
   Vinayaka Mission Annapoorna College of Nursing,
   Salem.
5. **Mrs. Sathya Lawrence, M.Sc (N).,**
   HOD of Child Health Nursing,
   Apollo College of Nursing, Chennai.
6. **Mrs. Beryl Mohanraj, M.Sc (N).,**
   Principal,
   Servite College of Nursing, Trichy.
7. **Mrs. Kavimani, M.Sc (N).,**
   Principal,
   SPM College of Nursing, Erode.

ANNEXURE –G

CERTIFICATE EDITING

St Peter's Matriculation Higher Secondary School

(Permanent Recognition No. 3260 / W12 / 2000 dated 9.2.2001)

Golf Club Road, P.O. Box 8, Kodaikanal - 624 103.

CERTIFICATE OF EDITING

TO WHOMSOEVER IT MAY CONCERN

Certified that the dissertation paper titled **"A study to Assess the Effectiveness of Kaleidoscope Vs Toy Mobile Phones as Distraction Techniques on Pain Among Children during IV Infusions at Selected Hospitals, Salem."** By **Ms. Mercy Suguna .E**, II year M.Sc Nursing student of Sri Gokulam College of Nursing has been checked for accuracy and correctness of English language usage and that the language used in presenting the paper is lucid, unambiguous free of grammatical or spelling errors and apt for the purpose.

Sam.Jesudasan, M.A., M.Phil., M.Ed.,
PRINCIPAL
St. Peter's Mat.Hr.Sec.School
Kodaikanal - 624 103.

Phone : (04542) 240543, 240743 Fax : (04542) 242443 E-mail : stpeters2001@rediffmail.com
Website : www.petersschoolkodai.com

ANNEXURE –H

PHOTOS

DISTRACTING CHILD WITH KALEIDOSCOPE

DISTRACTING CHILD WITH TOY MOBILE